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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,038	12/16/2005	Katsuhito Miura	2005_1996A	3768

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EXAMINER	
LEWIS, BEN	

ART UNIT	PAPER NUMBER
1726	

NOTIFICATION DATE	DELIVERY MODE
11/19/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/561,038	MIURA ET AL.	
	Examiner	Art Unit	
	Ben Lewis	1726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. The Applicant's remarks filed on October 28th, 2010 was received.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (issued on July 9th, 2010).

Claim Rejections - 35 USC § 103

.3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohjiya et al.. (U.S. Patent No. 5,837,157) in view of Miura et al. (U.S. Patent No. 6,159,389) and further in view of Takatera et al. (U.S. Patent No. 6,159,638).

With respect to claim 1, 3, 4, Kohjiya et al. disclose a polymer solid electrolyte (title) wherein the present invention provides a polymer solid electrolyte comprising a polyether copolymer having an oligooxyethylene side chain and an electrolyte salt compound which is soluble in the polyether copolymer, the polyether polymer being a solid random copolymer having a main chain structure consisting of 5 to 30 molar % of a structural unit of the following formula (1) and 95 to 70 molar % of a structural unit of the following formula (2), and the polyether polymer having a polymerization degree n of an oxyethylene unit of the side chain part of the formula (1) of 1 to 12, a number-average molecular weight of 100,000 to 2,000,000, a glass transition point measured by a differential scanning calorimeter (DSC) of not more than -60.degree. C. and a heat of fusion of not more than 70 J/g (Col 1 lines 10-35). (Examiner notes that Kohjiya polymer

composition comprises only two polymers of formula (1) and (2) which read on Applicants formula (i) and (ii).

Kohiya et al. teach tetrahydrofuran as a solvent (Col 4 lines 1-15).

Kohiya et al. does not specifically teach an additive as an optical ingerdient. However, Miura disclose a polyether copolymer wherein triethylene glycol dimethacrylate (additive) was added as a crosslinking agent (Col 14 lines 1-16). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the additive of Miura et al. into the polymer solid electrolyte of Kohjya et al. to improve polymer mechanical strength.

Miura et al. as modified by Kohiya et al. do not specifically teach wherein the amount of the electrolyte solution is within the range of 100 to 10,000 parts by weight based on 100 parts by weight of the polyether binary copolymer. However, Taketera et al. disclose a solid polymer electrolyte and preparation method (title) wherein, the weight ratio of the polymer blend to the nonaqueous solvent is preferably 30 to 100 parts by weight relative to 100 parts by weight of the nonaqueous solvent. If the proportion of the polymer blend is smaller than 30 parts by weight, the exudation of the nonaqueous solvent may result, making it difficult to shape the resulting solid polymer electrolyte as desired. Even if the shaping of the solid polymer electrolyte is possible, the electrolyte may have an insufficient mechanical strength. If the proportion of the polymer blend is greater than 100 parts by weight, the effect of addition of the nonaqueous solvent cannot be expected for ensuring a high ionic conductivity (Col 6 lines 1-13). Therefore it would have been obvious to one of ordinary skill in the art to in

corporate the weight ratio of electrolyte solvent to polymer of Taketera et al. into the electrolyte solution of Miura et al. as modified by Kohiya et al. because Taketera et al. teach that If the proportion of the polymer blend is smaller than 30 parts by weight, the exudation of the nonaqueous solvent may result, making it difficult to shape the resulting solid polymer electrolyte as desired. Even if the shaping of the solid polymer electrolyte is possible, the electrolyte may have an insufficient mechanical strength. If the proportion of the polymer blend is greater than 100 parts by weight, the effect of addition of the nonaqueous solvent cannot be expected for ensuring a high ionic conductivity (Col 6 lines 1-13).

Furthermore, it would have been within the skill of the ordinary artisan to incorporate adjust the electrolyte solution and copolymer composition of Miura et al. as modified by Kohiya et al. to be within the applicants claimed composition range in order to ensure high ionic conductivity *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claim 2, Miura et al. teach that as the ethylenically unsaturated group-containing oxirane compound there can be glycidyl acrylate and glycidyl methacrylate (Col 4 lines 55-67).

With respect to claims 5-8, Kohjiya et al. teach a battery comprising a positive and negative electrode and polymer solid electrolyte of (Col 4 lines 19-36).

4. Claim 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohjiya et al.. (U.S. Patent No. 5,837,157) in view of Miura et al. (U.S. Patent No. 6,159,389) and further in view of Takatera et al. (U.S. Patent No. 6,159,638)..

With respect to claim 2, Kohjiya et al. disclose a polymer solid electrolyte above. Kohjiya et al. do not specifically teach wherein the repeating units of formula (ii) are derived from glycidyl acrylate and glycidyl methacrylate.

In the crosslinking due to radiation of activated energy ray such as ultraviolet ray, glycidyl acrylate, glycidyl methacrylate and glycidyl cinnamate are particularly preferable among the monomer component represented by the formula (III-c) (Col 8 lines 35-40).

Therefore it would have been obvious at the time the invention was made to use the glycidyl acrylate and glycidyl methacrylate of Miura et al. to make derive the compound of formula (1) of Kohjiya because a person of ordinary skill has good reason to pursue the known options within his or her technical grasp, in this case, to use the glycidyl acrylate and glycidyl methacrylate Miura et al., because these corsslinking agents are activated by using radiation. Ex Parte Smith, 83 USPQ.2d 1509, 1518-19 (BPAI, 2007) (citing KSR v. Teleflex, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)).

Response to Arguments

5. Applicant's arguments filed on October 28th, 2010 have been fully considered but they are not persuasive.

Applicant's principal arguments are

(a). As discussed heretofore, the presently claimed polymer electrolyte composition is a gel because the composition contains a crosslinked material of polyether binary copolymer and a large amount of electrolyte solution. However, the compositions of the Kohjiya and Miura references are not gels. Specifically, the cast mix solution of the Kohjiya reference is dried and contains none or a very small amount of electrolyte solution or organic solvent. See Example 1, column 4, lines 57-59 of Kohjiya. Moreover, the solid polymer electrolyte of the Miura reference contains none or a very small amount of electrolyte solution or organic solvent. See Example 1 of Miura. Accordingly, since the Kohjiya and Miura references fail to teach the large amount of electrolyte solution as presently recited, the compositions of the references are not gels, and are therefore, distinct from Applicants' claimed composition.

(b) At the bottom of page 3 of the Office Action, the Examiner acknowledges that Kohjiya and Miura fail to teach gel compositions and attempts to rely on Takatera to remedy this deficiency. However, the polymers of Takatera are significantly different from the polymers of the present invention and that of Miura and Kohjiya and therefore, would not be relied upon by one of ordinary skill in the art in an attempt to achieve the present invention. Specifically, Takatera uses a fluoropolymer such as PVdF

(polyvinylidene fluoride) (molecular weight: 10,000 to 1,000,000; column 4, lines 58-60) as a base polymer. The polymer used in the present invention is not a fluoropolymer. Moreover, Takatera separately uses a crosslinkable polyether having a low molecular weight (molecular weight: 1,000 to 50,000; column 4, lines 23-25) as a crosslinkable component added to the base polymer. In contrast, the crosslinkable component of the present invention has a high molecular weight (molecular weight: 104 to 107; claim 1) and is 1. part of the polyether binary copolymer, i.e., the base polymer. See also claim 1 of Miura and Kohjiya. Thus, the polymer of Takatera is remarkably different from the polymers of the present invention, Miura and Kohjiya.

Accordingly, in considering Takatera, a person of ordinary skill in the art would conceive only the use of a fluoropolymer to which a crosslinkable polyether must be added rather than a polymer with an integrated crosslinkable component. Moreover, Takatera teaches away from the present invention, wherein the polymer is not the fluoropolymer. See column 2, line 4 to column 3, line 16.

In response to Applicant's arguments, please consider the following comments.

(a) In response Examiner notes that Applicants claims do not specifically recite a "gel" electrolyte. Furthermore Kohiya et al. teach an electrolyte salt and tetrahydrofuran as a solvent within the solid electrolyte therefore it is inherent that the solid electrolyte of

Kohiya et al. is in gel form. Examiner also notes that tetrahydrofuran is an aprotic organic solvent which forms an electrolyte solution within the solid polymer electrolyte of Kohiya et al. when the electrolyte salt of Kohiya et al. is dissociated in the tetrahydrofuran solvent.

(b) In response to Applicant's argument that *"Takatera are significantly different from the polymers of the present invention and that of Miura and Kohjiya and therefore, would not be relied upon by one of ordinary skill in the art in an attempt to achieve the present invention."* the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Examiner notes that the Takatera et al. reference was used to show that it would have been obvious to one of ordinary skill in the art to incorporate the weight ratio of electrolyte solvent to polymer of Taketera et al. into the electrolyte solution of Miura et al. as modified by Kohiya et al. because Taketera et al. teach that If the proportion of the polymer blend is smaller than 30 parts by weight, the exudation of the nonaqueous solvent may result, making it difficult to shape the resulting solid polymer electrolyte as desired. Even if the shaping of the solid polymer electrolyte is possible, the electrolyte may have an insufficient mechanical strength. If the proportion of the polymer blend is

greater than 100 parts by weight, the effect of addition of the nonaqueous solvent cannot be expected for ensuring a high ionic conductivity (Col 6 lines 1-13). The Taketera et al. reference was not used

The Taketera et al. reference was not used as a teaching of the type of polymer to be used.

Conclusion

6. **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ben Lewis/
Examiner, Art Unit 1726

/Patrick Joseph Ryan/
Supervisory Patent Examiner, Art Unit 1726